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John Hey

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN HEY

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Appeal 2008-2219  
Application 09/682,659  
Technology Center 2800

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Decided: July 29, 2008

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Before THOMAS A. WALTZ, ROMULO H. DELMENDO, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a final rejection of all pending claims 14-19, 21-26, 41, and 42. (Final Office Action entered October 17, 2006.) We have jurisdiction under 35 U.S.C. § 6(b).

Appellant's invention relates to a system for "displaying and viewing a pair of conventional stereoscopic images on ordinary media." (Spec. ¶ 0005). The image pair is "two normally oriented pictures of a single subject,

representing the perspective of a hypothetical viewer's left- and right-eye, respectively.” (*Id.* ¶ 0024). The media includes “those typically used for the display of 2-dimensional images, i.e., TV, movies, video-game, computer screen, electronic display, printed page, drawing, painting, mural, etc.” (*Id.* ¶ 0025). The images are viewed through a viewing device that re-angles at least one eye's optical path to view at least one image non-perpendicularly. (*Id.* ¶ 0006). Viewing the images from this off-center perspective, or as an effect of viewing the images through the viewing device, causes image distortions resulting in a stereoscopic mismatch between the two images. (*Id.* ¶ 0007). Appellant's claimed system compensates for these distortions by distorting at least one of the images. (Claim 14).

Representative claims 14, 18, and 19 read as follows:

14. A system for stereoscopic viewing of an image, comprising:

means for displaying upon a generally flat surface a conventional stereoscopic pair of images, proximate but separately from one another;

means for improving the stereoscopic match between the two images as viewed, by distorting at least one of the images;

and an optical device adapted to be placed in front of and proximate to a viewer's eyes, which device is worn by the viewer or held by the viewer as though worn, and comprising means for re-angling the optical axis for at least one eye, so that each eye generally targets the center of a respective one of the pair of images.

18. The system of claim 14, in which at least one image is deliberately distorted prior to display, to counteract distortion caused by the viewer's perspective relative to the image.

19. The system of claim 14, in which at least one image is deliberately distorted prior to display, to counteract image-mismatch caused by the viewing-device.

The prior art references relied upon by the Examiner to reject the claims on appeal are:

Craig	US 4,740,836	Apr. 26, 1988
Margulis	US 6,340,994 B1	Jan. 22, 2002

The following rejection is before us for review:

Claims 14-19, 21-26, 41, and 42 are rejected under 35 U.S.C. § 103(a) as unpatentable in view of the combined teachings of Craig and Margulis.

We AFFIRM.

#### ISSUE

Has Appellant shown reversible error in the Examiner's determination that the subject matter of claims 14-19, 21-26, 41, and 42 would have been obvious to one of ordinary skill in the art in view of the combined teachings of Craig and Margulis?

#### FINDINGS OF FACT

The record supports the following findings of fact, as well as any other findings of fact described in this opinion, by a preponderance of the evidence.

1. Appellant's Specification discloses a stereoscopic viewing system for viewing one image above the other, where "[b]oth eyes gaze nominally at the bottom image, but one of the eyes actually looks into a mirror apparatus that deflects [i.e., re-angles] that eye's gaze upward to view the top image instead." (Spec. ¶ 0006).

2. Appellant's Specification states that "[n]aturally, the upward-gazing eye's respective image therefore appears as somewhat distorted. Because it is being viewed from 'below', that image appears to be disproportionately larger at the bottom." (*Id.* ¶ 0007).
3. Appellant's Specification also discloses that lengthening one "eye-to-image optical path" in relation to the other "eye-to-image optical path" creates a mismatch that "interferes with the stereoscopic melding of the two images," as one image appears smaller than the other. (*Id.* ¶ 0007).
4. Appellant discloses that remedies for distortions caused by "re-angling" one eye's gaze and having "eye-to-image optical path" differences between eyes include increasing "the overall eye-to-image distance," so the mismatch becomes negligible. (*Id.* ¶ 0007).
5. Appellant's Specification asserts another remedy for disparities caused by viewer perspective and stereoscopic mismatch is that "[t]he image can be rendered as already 'reverse-distorted.'" (*Id.* ¶ 0007).
6. Appellant's Specification describes "reverse-distorting" (i.e., reshaping) an image whereby "[o]ne example method of effecting such a reshaping is to project the initial image onto a tilted surface." (*Id.* ¶ 0034).
7. Appellant's Specification asserts that "viewing the image from any off-center perspective (and not merely from below-center) incurs similar distortions, which in turn are subject to similar remedies." (*Id.* ¶ 0008).
8. Craig discloses producing a pair of stereo images on a video display, along with optical means "to allow a viewer to see one of the images of the stereo pair with one eye and the other of the images with the other eye." (Col. 5, ll. 15-24).

9. Craig discloses a system for stereoscopic viewing including a video display 11 that displays two stereoscopic images 13, 15 one above the other. A viewer uses an optical wedge means 41 to view the images, whereby the viewer's left eye views the upper image 13 without looking through the wedge 43, while the right eye's gaze is re-angled through the optical wedge 43 to view the bottom image 15 from off-center. (Col. 4, ll. 21-38; Fig. 4).
10. Craig describes "[t]he video display means 11 . . . can be part of a standard television receiver or other video display such as that used in computer graphic video games." (Col. 4, ll. 35-38).
11. Craig describes a variable viewing device for viewing a stereoscopic pair of images that "allow[s] a viewer to see one of the images with one eye and the other of the images with the other eye over a wide range of display sizes and viewing distances." (Col. 3, ll. 60-68).

#### PRINCIPLES OF LAW

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim *shall be construed* to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." *In re Donaldson*, 16 F.3d 1189, 1193 (Fed. Cir. 1994).

"That the rejection here is described as one under [§] 103 is not controlling, for it is not in this case rebuttable by evidence. Here we have the ultimate obviousness-lack of novelty. To recognize that fact is not to

replace the rejection with a new one based on anticipation.” *In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982).

## ANALYSIS

*Rejections of claims 14-17 and 21-26 as obvious in view of the combined teachings of Craig and Margulis*

Appellant argues claims 14-17 and 21-26 together, submitting specific arguments to claim 14. Accordingly, we select claim 14 as representative and confine our discussion to this claim. 37 C.F.R. § 41.37(c)(1)(vii) (2006).

Appellant does not contest the Examiner’s finding that the prior art discloses a system for stereoscopic viewing including means for displaying a stereoscopic pair of images and an optical device, as claimed in claim 14. (FF 8, 9; Br. 5, l. 18 through Br. 9, l. 17; Ans. 3, l. 1 through Ans. 5, l. 3). Rather, Appellant argues that “[c]laim 14 has a ‘means for improving the stereoscopic match between the two images as viewed, by distorting at least one of the images,’” and that “[n]either Margulis nor Craig discloses any such means.” (Br. 5, ll. 22-24). We do not agree with Appellant.

Appellant’s claimed invention is a *system* for stereoscopic viewing, and the claimed “means” for performing the function of “improving the stereoscopic match . . . by distorting at least one of the images,” is *structure*, as disclosed in the Specification, corresponding to the claimed function. As discussed below, this corresponding structure to the claimed function is disclosed in the prior art.

The claimed “system for stereoscopic viewing of an image” requires a “means for improving the stereoscopic match . . . by distorting at least one of

the images.” (Claim 14). Appellant’s use of the claim term “means for,” raises the presumption that the claim invokes 35 U.S.C. § 112(6). Appellant does not rebut this presumption.

In construing a claimed means plus function limitation, the claimed function is first identified. Once identified, we look to the Specification to find which corresponding structures, material, or acts, and equivalents thereof, are disclosed to perform the claimed function. *In re Donaldson*, 16 F.3d at 1195 (“[T]he PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination”). Here, the claimed function is to improve a stereoscopic match between a conventional stereoscopic pair of images displayed proximate, but separately from each other on a generally flat surface, by distorting at least one of the images.

Appellant’s Specification discloses a stereoscopic viewing system for viewing a pair of stereoscopic images, one above the other, where “[b]oth eyes gaze nominally at the bottom image, but one of the eyes actually looks into a mirror apparatus that deflects [i.e., re-angles] that eye’s gaze upward to view the top image instead.” (FF 1). Upon re-angling one eye’s gaze, “[n]aturally, the upward-gazing eye’s respective image therefore appears as somewhat distorted. Because it is being viewed from ‘below,’ that image appears to be disproportionately larger at the bottom.” (FF 2). Also, lengthening one “eye-to-image optical path” in relation to the other “eye-to-image optical path” creates an image mismatch that “interferes with the stereoscopic melding of the two images,” as one image appears smaller than the other. (FF 3). Appellant’s disclosed remedies for the disparities caused by viewer perspective (i.e., off-center viewing) and image mismatch include



1) increasing “the overall eye-to-image distance,” so the mismatch becomes negligible, and 2) rendering the image as already “reverse-distorted.” (FF 4, 5).

“Reverse-distorting” (i.e., reshaping) involves effecting a reshaping of the initial image, and Appellant’s Specification states this is accomplished by “project[ing] the initial image onto a tilted surface.” (FF 6). Thus, the claimed “means for improving the stereoscopic match between the two images as viewed, by distorting at least one of the images,” corresponds to an image display *structure* that is capable of tilting.

We now turn to the prior art to see if the structure, or equivalents, corresponding to the claimed “means,” was known at the time of invention. Craig discloses producing a pair of stereo images on a video display, along with optical means to “allow a viewer to see one of the images of the stereo pair with one eye and the other of the images with the other eye.” (FF 8). Craig further discloses:

An optical wedge means 41 includes a single optical wedge 43 through which the viewer can look with one eye. The wedge 43 has a fixed deviation or light refraction angle such that when a viewer is looking straight at one of the images 13, on the video display means 11 from a predetermined distance, the eye which does not look through the wedge sees that image while the other eye looking through the wedge 43 sees the other image 15. This allows each eye to see the correct image for the intended eye. The horizontal line 17 defines a separation zone between the images 13, 15 which eliminates confusion at the boundary.

(Col. 5, ll. 26-38; Fig. 4).

Fig 4 is reproduced below:

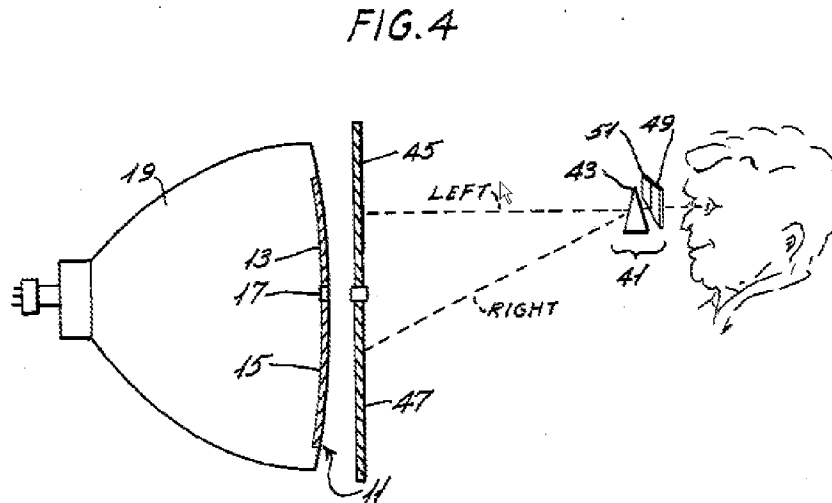


Fig. 4 illustrates two stereoscopic images 13, 15 displayed one above the other on a video display 11 as a viewer uses an optical wedge means 41 to view the images. The viewer's left eye views the upper image 13 without looking through the wedge 43 while the right eye's gaze is re-angled through the optical wedge 43 to view the bottom image 15 from off-center. (FF 9). Furthermore, Craig discloses the video display "can be part of a standard television receiver or other video display such as that used in computer graphic video games." (FF 10). As a standard video display, it is capable of being tilted to re-shape the displayed stereo image. Though Appellant's description of structure that reshapes an image is with regards to viewing the image with one eye's gaze re-angled upward, the Specification asserts that "viewing the image from any off-center perspective (and not merely from below-center) incurs similar distortions, which in turn are subject to similar remedies." (FF 7). Therefore, the prior art video display includes the same

structure Appellant discloses as corresponding to the “means for improving the stereoscopic match . . . by distorting at least one of the images.”

Appellant argues that “Craig does not address a significant flaw in the method of viewing such vertically arranged images.” (Br. 8, ll. 6-9). Furthermore, Appellant contends that “Craig does not distort the images for any purpose” (*Id.* 8, l. 6), and that “no one has ever deliberately distorted one or both images of a stereoscopic image pair in order to improve the stereoscopic match between the images.” (Br. 13, ll. 19-21). These arguments are unpersuasive.

Appellant’s arguments, directed towards *using* the claimed system in a way that improves a stereoscopic match, do not show that the claimed system was not known in the prior art. These arguments are not persuasive to show the prior art display *structure* is different from that disclosed for performing the claimed function, or is not capable of performing the claimed function. *In re Yanush*, 477 F.2d 958, 959 (CCPA 1973) (“Appellant’s use limitation does not impart a structural feature different from those of the prior art. The last paragraph of 35 U.S.C. § 112, allowing an element to be expressed as a means for performing a function, cannot aid appellant”). For these reasons, we find that Appellant has not shown that the Examiner reversibly erred in finding the prior art discloses the claimed subject matter of claim 14.

In view of our finding that claims 14-17 and 21-26 are anticipated by Craig, we uphold the rejections under 35 U.S.C. § 103 in view of the combined teachings of Craig and Margulis. *In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982) (“[E]vidence establishing lack of all novelty in the claimed invention necessarily evidences obviousness”).

*Rejections of claims 18 and 19 as obvious in view of the combined teachings of Craig and Margulis*

Appellant argues that “neither reference teaches image distortion to counteract distortion caused by the viewer’s perspective relative to the image or to counteract image mismatch caused by the viewing device.” (Br. 15, ll. 11-13). For similar reasons, as discussed above, we do not agree with Appellant.

As discussed above, Appellant’s Specification discloses distortion resulting from the viewer’s perspective as one portion of an image appearing disproportionately larger than another portion. (FF 1, 2). Remedies for this distortion include reshaping the image, which can be accomplished by tilting the image display surface. (FF 5, 6). As discussed above, Craig discloses Appellant’s described structure of an image display surface that can be tilted, and therefore discloses the claimed subject matter of claim 18.

The recited subject matter of claim 19, “in which at least one image is deliberately distorted prior to display, to counteract image-mismatch caused by the viewing-device,” is also disclosed in the prior art. As discussed above, one remedy of deliberately distorting an image to improve the “image-mismatch” by a viewing device is disclosed by Appellant as increasing the “overall eye-to-image distance.” (FF 3, 4). The prior art system structure is capable of employing this remedy. The image distortion due to increased overall “eye-to-image distance” (i.e., smaller images, as well as a changed image perspective of an “eye-to-image optical path” more perpendicular to the plane of the image surface than at closer distances) can be used with the prior art system by increasing the distance between the

viewer and image, with appropriate adjustment of the optical wedge. (FF 11).

Thus, when properly construed, claims 18 and 19 are anticipated by Craig, and therefore, obvious in view of the combined teachings of Craig and Margulis. *In re Fracalossi*, 681 F.2d at 794.

*Rejections of claims 41 and 42 as obvious in view of the combined teachings of Craig and Margulis*

Appellant relies on the same arguments, as discussed above, in support of patentability of claims 41 and 42. For the reasons discussed above, the subject matter of claims 41 and 42 is found anticipated by Craig; therefore, we uphold the Examiner's determination of obviousness over the combined teachings of Craig and Margulis. (*Id.*)

### CONCLUSION

Appellant has failed to show that the Examiner reversibly erred in concluding that one of ordinary skill in the art would have found the subject matter of appealed claims 14-19, 21-26, 41, and 42 obvious in view of the combined teachings of Craig and Margulis.

Accordingly, the decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

Appeal 2008-2219  
Application 09/682,659

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